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ART UNIT		PAPER NUMBER		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/826,078

Applicant(s)

HACK ET AL.

Examiner

JASON L. LAZORCIK

Art Unit

1791

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 October 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,5-13,15-25,27,28 and 31-33 is/are pending in the application.
- 4a) Of the above claim(s) 17-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,5-13,15,16,27,28 and 31-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Status of the Claims

Applicants reply dated October 28, 2008 amends claims 1 and 12, cancels claims 26, 29, and 30, and adds new claims 31-33

Claims 2, 4, 14, 26, 29, and 30 have been canceled by Applicant

Claims 17-25 are withdrawn from consideration as being directed to a non-elected invention

Claims 1, 3, 5-13, 15-16, 27-28, and 31-33 are pending for prosecution on the merits.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

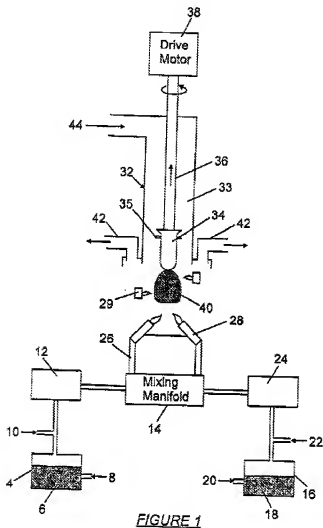
2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 3, 5-13,15-16, 27-28, 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ackerman (US 2002/0157421 A1) and Okamoto et. al. (US 4,358,306, and further in view of Adler (US 6,588,230) and Imoto et. al. (Journal of Lightwave Technology v.6,n.9, (1988),1376-1385) and the ordinary level of skill in the art at the time of the invention.

With particular respect to **claim 27**, Ackerman teaches a method for manufacturing titania-doped [**Claim 1**] fused silica for lithographic elements. Ackerman teaches feeding silica and titania precursors to a single burner (§§[0007], §§[0017]) whereby a porous glass preform is deposited and grown upon a fused quartz bait (34) (§[0016]). Although not explicitly taught, one of ordinary skill in the art would recognize that since the target (22) would become integrated with the growing silica ingot, it would be a merely obvious extension to match the dopant profile of the target to desired the dopant profile of the growing ingot [**Claim 15**].

The reference states that the titania dopant concentration may range from 2 to 12 percent by weight (§[0020]) [**Claims 5,6,7**] and that the preform may subsequently be subject to a treatment (§[0019]) wherein a dopant comprising fluorine is added to the preform [**Claim 3**]. The exemplary dopants of CF_4 or SiF_4 are each construed to comprise at least 0.005 wt.% fluorine or 0.01 wt% fluorine as recited in **Claims 8 and 9**, respectively



It is evident from the figure 1 (see above excerpt) that this bait or target is arranged substantially horizontally for growth of the body in a substantially vertical direction. Although not expressly discussed, one of ordinary skill in the art would appreciate that the apparatus could reasonably be re-oriented for growth of the ingot in a substantially horizontal direction [Claim 13]. Similarly, the Apparatus as depicted above could be completely inverted to provide for a burner below the bait for growth of the preform in a substantially vertical direction [Claim 12, 33]. Such a general

reorientation of the apparatus does not affect the relative positioning of the burner and bait, and would not be expected to materially alter the deposition process in any, *per se*, unexpected manner. That is, the influence of gravity upon the growing preform would be fully predictable by a skilled technician and the mere global reorientation of the apparatus with out without any relative change in parts of the apparatus is *prima facie* obvious over the prior art, absent compelling evidence of unexpected results to the contrary.

During growth of the preform, Ackerman teaches that the bait is rotated (§[0013]) [Claim 10] and that the bait is translated away (§[0017]) from the burner to maintain a constant burner-to-soot distance [Claim 11]. With reference to the figure 1 excerpt above, the Ackerman deposition burner or burners (28) are maintained at a fixed location outside of the furnace wall or "muffle" (32) while the glass body is formed "through an opening in the furnace muffle" [Claim 31]. Finally, Ackerman teaches (§[0019]-[0020]) that the preform is subject to a thermal consolidation step and is subsequently subject to at least one further reshaping step wherein the preform is cut to desired shape [Claim 16].

(I) Ackerman is silent regarding reshaping of the preform

Ackerman is silent regarding the nature of the thermal consolidation step and is specifically silent regarding a step of "reshaping the first formed body into a second formed body having a larger breadth and smaller height than said first formed body".

(II) The claimed preform reshaping step is obvious in view of Okamoto

Okamoto teaches a method for reducing striae in a synthetic silica ingot manufactured in a flame hydrolysis technique. The Okamoto method relates to treating glass preforms fabricated by flame hydrolysis and would be recognized as closely related to the Ackerman teachings by one of ordinary skill in the arts.

Okamoto teaches that a glass body produced by vapor phase decomposition may be subsequently subject to compression molding at a temperature above the transition temperature. Such a molding process provides a glass body "freed from the problems of the striae and the compositional inhomogeneity caused by the localization of h impurities or dopants" (Column 3, lines 1-11). It is evident from the instant reference figure 2 that the thus molded body displays a second formed body having a larger breadth and a smaller height than the original body fabricated by the flame method.

In view of the foregoing, it would have been obvious for one of ordinary skill in the arts to employ the Okamoto molding consolidation technique upon the glass preform of the Ackerman process. Such a modification would have been obvious for one of ordinary skill seeking to produce glass body by VAD which is free "from the problems of the striae and the compositional inhomogeneity caused by the localization of h impurities or dopants".

(III) Ackerman is silent regarding dimensions and tolerances used in growing the preform

Regarding Applicants **claim 27, 28, and new claim 32**, Ackerman and Okamoto are silent regarding the particular claimed dimensions used in growing the preform within the furnace. Specifically, the cited prior art is silent regarding;

1) keeping a distance of about 10 to 20 mm between a flame outer rim and a refractory material of a furnace muffle as required by **claim 27**

2) wherein a burner hole is "configured gradually conically shaped and opening gradually with an angle of 10 to 20°" as required by **claim 28**.

3) wherein a distance between the single burner and a particle generation point on a target is kept constant between 150 and 250mm as required by **claim 32**

(IV) Applicants claimed dimensions are deemed conventional and obvious over the cited prior art in view of Adler and Imoto and the ordinary level of skill in the art at the time of the invention

Although the prior art is silent regarding the particularly claimed dimensions, said limitations are not deemed to patentably distinguish the claimed invention over that presented in the prior art in view of the teachings of Adler (US 6,588,230), Imoto et al., and the ordinary level of skill in the art at the time of the invention.

Adler teaches a multi-nozzle burner for vapor phase growth of a silica glass preform having a tapered or gradual opening (see figure 11). Adler teaches that the burner may be configured "gradually conically" and may display an opening with an angle of 10 to 20° (see particularly Table 2). The same reference notes (Column 2,

lines 1-6) that it is merely routine to provide a gap of "about a quarter inch", or about 10 to 20 mm as claimed, between the furnace refractory material and the nozzle "so as to cool the burner hole and prevent soot buildup on the walls of the hole".

Similarly, Imoto teaches a flame deposition process for producing a glass preform body wherein a burner is maintained at a constant distance in the range of approximately 110 to 130mm (See pg 1379). Further, Imoto teaches direct cause and effect relationship between the burner/preform separation distance and the resultant shape and refractive index profile in the thus formed glass body.

In view of the Adler reference, Applicants claimed burner features appear to constitute dimensional ranges that would be recognized as merely routine or typical conditions to one of ordinary skill in the art of fabricating glass preforms by VAD. That is, providing a conical opening of 10 to 20o would have represented an obvious design choice for the burner in view of the Adler reference as similar burners have been successfully employed in the VAD formation of optical preforms. Similarly Adler teaches maintaining a separation distance of "about a quarter inch" or "about 6.3mm" which the Examiner construes to read upon the lower limit of Applicants recited range of "about 10mm". Additionally, this separation distance would reasonably have been subject to routine optimization by a skilled engineer seeking to minimize unwanted deposition of glass forming reagents upon the walls of the reactor. It follows, absent compelling evidence to the contrary, that Applicants claimed separation distance would

reasonably have been derived through no more than routine experimentation and optimization of the prior art disclosed apparatus.

Similarly, regarding the separation distance between the burner and the preform and between the flame and the muffle, it is the Examiners assessment, in view of the Imoto reference, that Applicants claimed separation distance of 150 to 200mm would be construed as typical for VAD type processes or would have been derived through routine process optimization of the prior art disclosed process.

That is, where Imoto teaches a separation distance in the range of approximately 110 to 130 mm (see for example figure 7, page 1379) and this separation distance is further disclosed as having a direct causal relationship with both the shape and refractive index profile of the resulting preform, it is the Examiners assessment that the separation distance would be subject to routine experimentation and optimization by the skilled practitioner. It follows, absent compelling evidence of unexpected results that Applicants claimed range of 150 to 250 mm would be recognized as a conventional separation distance and would have reasonably been derived through no more than routine experimentation and optimization of the prior art disclosed process.

3. Claims 12 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ackerman (US 2002/0157421 A1) and Okamoto et. al. (US 4,358,306, Adler (US 6,588,230) and Imoto et. al. (Journal of Lightwave Technology v.6,n.9,

(1988),1376-1385) as applied to claim 27 above and further in view of Okamoto (US 4,432,781).

Applicant was advised above that global reorientation of the process (e.g. growing the preform horizontally, vertically with the burner above the bait, or vertically with the burner below the bait) is not construed to patentably distinguish the claimed process over that disclosed in the prior art when viewed in light of the ordinary level of skill in the art at the time of the invention. With respect to this matter, Applicants was advised that a skilled technician would be fully able to predict the influence of gravity upon the growing bait for a given process orientation. It follows that where the relative positioning of the process components (e.g. bait to flame) are substantially equivalent, any global orientation of the process as deemed suitable by the end user is considered prima facie obvious over the prior art.

In the event that Applicant should contest the Examiners conclusion on this matter, then the noted claims 12 and 33 are deemed obvious over the previously discussed prior art referenced in view of Okamoto (US 4,432,781).

The reference to Okamoto teaches a very similar method for vapor growth of an optical preform to that used by Ackerman. In the instant case, Okamoto teaches placement of the burner (2) at a position above the bait (7) for growth of the preform (8) in a substantially vertical direction. Okamoto makes it quite evident that placement of

the burner above the bait was a known technique at the time of the invention, and for the reasons noted above, it would have been obvious for one of ordinary skill in the art to orient the Ackerman process in any manner deemed most appropriate by the end user.

Response to Arguments

Argument #1)

Applicant acknowledges that Adler discloses a gap of "about a quarter inch" between the burner and the outer face of the crown or "muffle". Applicant however alleges that the claims require a distance of between 10 and 20 mm which Applicant asserts is "quite different" from a quarter inch (6.35 mm).

Applicants arguments on the matter are not persuasive

First, Applicant is advised that the prior art cited separation distance is "about" a quarter inch (6.3 mm) and that the lower limit of the claimed range is "about" 10 mm. Applicant was advised that the distance of "about a quarter inch" was construed to read upon Applicants claimed lower limit of "about 10mm". Applicant has provided no evidence to suggest that the prior art range would not reasonably read upon the presently recited range.

Second, Applicant was advised that it would have been a merely routine matter for one of ordinary skill in the art to vary the separation distance between the flame and

furnace in order to minimize deposition of reagents upon the wall of the furnace. Absent evidence of substantially unexpected results, Applicants claimed range would have reasonably been derived by the trained practitioner through no more than routine experimentation and optimization of the prior art disclosed methods. With respect to this part of the rejection, Applicant has failed to provide any evidence on the record to indicate that the recited distance is anything other than routine or that said working distance results in a substantially unexpected outcome or result.

To the extent that Applicant argues that the prior art is "quite different" from the instant claimed invention, Applicant has provided no conclusive evidence of unexpected results to support of the instant allegations. It follows that said allegations are held to be mere conjecture and attorney argument.

The Official policy regarding Attorney argument is clearly outlined in MPEP §2145 [R-3];

"Attorney argument is not evidence unless it is an admission, in which case, an examiner may use the admission in making a rejection. See MPEP § 2129 and § 2144.03 for a discussion of admissions as prior art. The arguments of counsel cannot take the place of evidence in the record. In re Schulze, 346 F.2d 600, 602, 145 USPQ 716, 718 (CCPA 1965); In re Geisler, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997) ("An assertion of what seems to follow from common experience is just attorney argument and not the kind of factual evidence that is required to rebut a prima facie case of obviousness."). See MPEP § 716.01(c) for examples of attorney statements which are not evidence

and which must be supported by an appropriate affidavit or declaration.

Argument #2)

Regarding Claim 27, Applicant alleges that in the prior art both the burner and the target are placed within the furnace while in the claimed invention, the glass body is formed "through an opening of a furnace muffle".

Applicants arguments on this matter have been carefully reviewed but are deemed unpersuasive.

Specifically with reference to figure 1 of the Guerder reference, the deposition gasses are fed via feed lines through respective openings in the furnace wall (10) or "muffle" to burners 13, 19, and 20. Such a configuration would reasonably be construed to form a glass body "through an opening in a furnace muffle" in the broadest reasonable construction of the term. Similarly, in the Ackerman reference deposition burners (28) are maintained at a fixed location outside of the furnace wall or "muffle" (32) while the glass body is formed "through an opening in the furnace muffle" (see particularly Figure 1).

Although applicant alleges a distinction between the prior art and the claimed invention, namely that the prior art burner is completely within the furnace walls while the claimed invention is not, such a limitation is nowhere reflected in the claim language. In response to applicant's argument that the references fail to show certain

features of applicant's invention, it is noted that the features upon which applicant relies are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Further to the extent that Applicant directs arguments exclusively against the Imoto reference, Applicant is advised that the grounds of rejection is clearly based upon the references to Ackerman, Okamoto, Adler and Imoto under 35 U.S.C. §103(a). In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Argument #3)

Regarding Claims 12 and 33, Applicant asserts that the target is arranged below the burner and the first formed body is grown in the vertical direction. Applicant thereafter asserts that Imoto places the burner at the bottom and uses a target which is placed above the burner. Applicant thereby concludes that the claimed invention is distinguished over that disclosed in the prior art.

Applicant's arguments with respect this matter been considered but are moot in view of the new and expanded ground(s) of rejection as presented above. Specifically, Applicant was previously advised (see pages 5-6 of the Official Action dated July 28,

2008) that orientation of the growth process was not construed to impart a patentable distinction in view of the ordinary level of skill in the art. Applicant has provided substantially no rebuttal to the Examiners stated position on this matter. In the instant Action, the Examiner maintains the previously stated position, expanding on the prior issued grounds of rejection only in order to better clarify the Official position, and to further introduce the reference to Okamoto in order to show that Applicants preferred orientation was known at the time of the invention.

Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JASON L. LAZORCIK whose telephone number is (571)272-2217. The examiner can normally be reached on Monday through Friday 8:30 am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Steven P. Griffin/
Supervisory Patent Examiner, Art
Unit 1791

JLL